South Asia Forum For
Infrastructure Regulation

आज़ादी का अमृत महोत्सव

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INFRA REGULATORY BULLETIN

SAFIR E-NEWSLETTER I APRIL-JUNE 2024

Inside this Issue

Message from Chairperson, PUCSL

Warm greetings to the readers!

I am delighted to connect with you through the April-June 2024 issue of 'Infra Regulatory Bulletin' from the South Asia Forum for Infrastructure Regulation's (SAFIR). The Newsletter is a valuable resource for keeping abreast with both regional and global infrastructure regulatory developments, simultaneously bringing contemporary regulatory issues of interest to awareness.

The recently concluded 4th Annual Conference in the Infrastructure for Development Conference Series organized by the World Bank threw light on the future of infrastructure financing for the sustainable development needs of nations. As SAFIR Member Nations progress further on their energy transition journey and embark on large scale infrastructure projects in energy, utilities & transportation, financing issues such as procurement, and public private partnership take centre stage.

The Public Utilities Commission of Sri Lanka (PUCSL) has been proactively playing its part to ensure an orderly development of the electricity, petroleum, water services industries through effective regulation. The Commission, in partnership with the Sri Lanka Engineering Council and the Ministry of Environment, has been taking significant strides towards strengthening the institutional framework for the upskilling of technical workforce in the electrical engineering, refrigeration, and air conditioning segments. Carrying forward the collaborative spirit to its regional endeavours, PUCSL hosted the 2024 SAFIR Annual Conference in a joint effort with the SAFIR Secretariat for a discussion on policy and regulatory aspects of Cross Border Trade for Clean Energy Transition and Transmission System Capabilities in the South Asian Region.

Finally, I'm glad to note the positive impact of the Indian Institute of Corporate Affairs (IICA) & SAFIR collaboration, which is brimming with potential to create a potent knowledge repository of infrastructure regulation for the collective betterment of our regulatory ecosystems.

Extending my sincere wishes for an enriching journey together towards well-regulated, resilient, and prosperous societies.

Regards

Prof M A R M Fernando

(Chairperson, Public Utilities Commission of Sri Lanka)

Public Utilities Commission of Sri Lanka

From the Editorial Desk

Dear Readers,

The past year was momentous for the South Asian Region (SAR). The Region is expected to remain at the forefront of world economic growth in 2024-25 with **more than 6% GDP growth** as projected by the World Bank. Relations among neighbor nations are further deepening on account of cooperation in areas including **clean energy**, and **digital payments infrastructure**.

SAFIR Member Nations continue to spearhead robust and orderly infrastructure growth in SAR with **joint endeavors in the energy sector**, such as the India-Bhutan Energy Partnership for development of hydro, solar projects; the proposed Bangladesh-India-Nepal tripartite agreement for power trade between Bangladesh and Nepal via India's transmission infrastructure; and the collaboration between Sri Lanka and India for implementing hybrid renewable energy systems in Sri Lanka. Catering to the need for periodic updates on regional and global infrastructure regulation & development, this edition presents a blend of latest happenings spanning across Power, Ports, Digital, Transport, and Telecommunications sectors.

Quarterly updates from SAFIR Members include inter alia Bangladesh's initiative for a Smart Fuel Distribution Monitoring System, Bhutan's exercise in setting standards of performance for power distribution services, Sri Lanka's bid to bring the electrical engineering workforce into the fold of the Government's formal skill recognition program National Vocational Qualification (NVQ), and India's Central and States Electricity Regulatory Commissions' recent regulations and amendments. Nepal-India bilateral meeting on the heels of the Nepal Investment Summit 2024 for facilitation of Indian investment in Nepal's infrastructure is also covered.

Globally, the events during this quarter reinforced the collective responsibility towards **mitigating the climate change crisis** with International Transport Forum's 2024 Annual Summit, International Maritime Organization's Sustainable Shipping and Ports event in Antigua and Barbuda, and the European Sustainable Energy Week (EUSEW) 2024 reflecting on ways to green the respective sectors. India's digital leadership was exemplified in the inaugural **United Nations Conference on Digital Public Infrastructure** in New York, USA.

Prof Naveen Sirohi

Prof (Dr) Naveen Sirohi
Founding Head, Centre of Regulatory Governance
HoD, School of Finance & Management
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News & Developments - SAFIR Members

BANGLADESH

Bangladesh Petroleum Corporation (BPC) to introduce Smart Fuel Distribution Monitoring System (SFDMS)

BPC - a state-owned oil marketing company, aims to modernize and streamline its fuel distribution process through the introduction of SFDMS. The initiative, expected to be completed by June 2025, will ensure monitoring of the entire process from fuel oil release to customer delivery. Initially, monitoring of the fuel oil transportation system will be taken up with the objective to curb irregularities in fuel transportation.

The SFDMS will comprise various elements for advanced monitoring such as modern Internet Protocol (IP) camera monitoring dashboards; Global Positioning System (GPS) tracker monitoring system; and a BPC hotline number for facilitating service and alleviating customer issues. This will be followed by implementation of BPC's multi-year plan (2026-2030) to modernize and digitalize the fuel marketing, supply and billing system.
Read More (Date: May 25, 2024)

Well-14 of Titas Gas Field in Bangladesh commenced Natural Gas Production

Post completion of works in May 2024 by Bangladesh Gas Field Company Limited (BGFCL) - a subsidiary of the state-owned Petrobangla, Well-14 of Titas Gas Field (TGF) achieved natural gas production. The Well is expected to produce a total of 40 billion cubic feet of natural gas, with the initial output being 12 million cubic feet of gas per day (MMCFD).

The supply of gas from Well-14, inaugurated by **Shri Md Nurul Alam** *(Secretary - Energy and Mineral Resources Division, Bangladesh),* is expected to take place over a period of 10-12 years. TGF is the largest gas field in Brahmanbaria, Bangladesh and is one the six gas fields being operated by BGFCL producing a total of 560 MMCFD.
Read More (Date: May 25, 2024)

BHUTAN

Bhutan secured €150 Million Loan from European Investment Bank (EIB) for Development of Renewable Energy (RE) Infrastructure

The 30-year loan, aimed at strengthening the supply of reliable and affordable energy to Bhutanese households throughout the year, is EIB's first investment in the nation. The renewable energy framework loan was signed in April 2024 by **Leki Wangmo** *(Finance Secretary, Bhutan)* and **Markus Berndt** *(Acting Managing Director, EIB Global)* in the presence of **Nadia Calviño** *(President, EIB).*

The funds will be used for financing solar photovoltaic and hydropower projects, augmenting Bhutan's RE capacity by an estimated 310 megawatt (MW). Bhutan's power generation company Druk Green Power Corporation is the implementing agency for the projects which are being financed under the European Union's (EU) Global Gateway initiative - a program for improving global and regional connectivity in the digital, climate, transport, health, energy and education sectors.
Read More (Date: April 17, 2024)

Electricity Regulatory Authority (ERA), Bhutan released the Distribution and Transmission System Performance Report 2023

The ERA, Bhutan has released the 'Distribution Power Reliability and Transmission System performance Report 2023' in May, 2024. Aiming to enhance power reliability through strong regulatory interventions and benchmarking, ERA analysed the power outages in the distribution and transmission system of Bhutan Power Corporation Limited (BPC) during 2023.

The study helped in determining preliminary baseline power reliability indices System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI). Referencing the baseline data, the ERA set the standards for the year 2024-25 at 20% lower, with SAIFI 15.17 times/customer/year, SAIDI 14.86 hours/customer/year, and transmission system performance standard at 98%.
Read More (Date: May 21, 2024)

NEPAL

Embassy of India in Nepal organized India-Nepal Meeting for facilitating Infrastructure Investment in Nepal

The B2B India-Nepal Meeting, organized in collaboration with the Investment Board of Nepal (IBN) and Nepal India Chamber of Commerce and Industry (NICCI), was held immediately after the Nepal Investment Summit 2024 on April 28-29, 2024 for incentivizing Foreign Direct Investment (FDI). 35 delegates from NICCI and the Millennium India International Chamber of Commerce and Industry (MICCIA) attended the meeting, including **Ms Shreejana Rana** *(President, NICCI)* and **Ambassador Anil Trigunayat** *(President, MICCIA).*

During the meeting, infrastructure investment opportunities in sectors including energy, agriculture, construction, cold chain, medical devices etc. were explored. Additionally, a Memorandum of Understanding was signed between NICCI and MICCIA.
Read More (Date: April 30, 2024)

Note: Nepal is a special invitee to SAFIR events/meetings and not an official member of the SAFIR Steering Committee

SRI LANKA

Public Utilities Commission of Sri Lanka (PUCSL) partnered with Sri Lanka Engineering Council for enhancing Professional Standards in Electrical Engineering

PUCSL signed a Memorandum of Understanding with the Sri Lanka Engineering Council on April 30, 2024 aimed at giving formal recognition to engineers & technicians engaged in the electrical, plumbing and refrigeration & air-conditioning professions, and upskilling of the workforce.

As per the terms of the 5-year partnership, professionals in the aforementioned segments will be eligible for the Vocational Credential Scheme and the free National Vocational Qualification (NVQ) Level 3 Award Scheme along with a professional ID card. The skill recognition at NVQ Level 3 paves the way for mandatory NVQ Level 4 requirement for the electrical engineering workforce from 2030.
Read More (Date: April 30, 2024)

INDIA

Central Electricity Regulatory Commission (CERC) issued 2024 Tariff Regulations for Renewable Energy (RE) Sources

CERC has notified the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024 for the control period July 1, 2024 to March 31, 2027. The Regulations deal with the process of tariff determination for grid-connected RE generating stations commissioned during the control period.

The Regulations give general and financial principles pertaining to tariff fixation, with provisions for determining both generic and project-specific tariff based on the tariff structure and design laid down in the Regulations. Additionally, treatment of financial, operational and technical parameters by CERC for different types of RE projects (wind, hydro, solar, biomass, biogas, RE with storage, etc.) has been listed separately.
Read More (Date: June 12, 2024)

Central Electricity Regulatory Commission (CERC) notified New Regulation for Grant of Transmission License

CERC has notified the CERC (Procedure, Terms, and Conditions for grant of Transmission Licence and other related matters) Regulations, 2024 on June 14, 2024. The Regulations, drafted in light of recent policy advancements in the Power Transmission Sector such as the constitution of the National Committee on Transmission (NCT) for centralized transmission planning and revised standard bidding documents & model transmission service agreements, supersede the 2009 Transmission Licence Regulations.

Some of the key features of the new regulations include shortened application processing timeline, reduction in compliance requirements by Tariff Based Competitive Bidding (TBCB) licensees & bulk consumers, and an emphasis on digital-based communications. For instance, TBCB licensees are allowed to amend their existing licence to include the new projects instead of seeking a separate licence, while bulk consumers don’t require a licence any longer for developing, maintaining, and operating dedicated lines for connection with the inter-state transmission system.
Read More (Date: June 14, 2024)

Jharkhand State Electricity Regulatory Commission (JSERC) notified Open Access Regulations for Green Energy

JSERC has issued the JSERC (Terms and Conditions for Green Energy Open-access) Regulations, 2024 with the objective of providing non-discriminatory open access (OA) to green (renewable) energy for use of Intra-State Transmission and/or Distribution Systems. The Regulations will be effective from May 9, 2024.

The notification contains detailed provisions regarding green energy open access (GEOA) such as categorization of GEOA consumers, allotment and curtailment (of access to transmission/distribution system) priority, procedure and charges for grant of open access, application procedure for day-ahead transactions, information system, and nodal agency for operation and management of GEOA system.
Read More (Date: May 9, 2024)

Andhra Pradesh Electricity Regulatory Commission (APERC) issued Regulations for Grant of Transmission License

APERC notified the APERC Transmission Licence Regulation, 2024 which comes into effect on May 17, 2024. The Regulations are aimed at consolidation of the procedure of granting transmission licences under general and special conditions, particularly in the context of development of intra-state transmission systems through tariff-based competitive bidding (TBCB).

The notification contains provisions related to the procedure and conditions for grant of transmission licence, giving details about eligibility for application, licence duration, suspension & revocation, standards of performance required to be achieved by the transmission licensee, furnishing of relevant financial details (business plan, capital investment, transfer of assets etc.) by the licensee, protection of railways, highways, telegraphic lines among other things.
Read More (Date: May 16, 2024)

Himachal Pradesh Electricity Regulatory Commission (HPERC) notified Tariff Regulations for Hydro Generation for 2024-29

HPERC has issued the HPERC (Terms and Conditions for Determination of Hydro Generation Tariff) Regulations, 2024. The Regulations, applicable to power generation companies supplying hydropower for determination of aggregate revenue requirement (ARR) and tariff, will remain in force from April 1, 2024 to March 31, 2029.

The Regulations lay down the general and financial guiding principles for determination of ARR and tariff for hydropower generation. The elements comprising ARR include Operation and Maintenance Expenses; Return on Equity Capital; Tax on Return on Equity; Interest on Loan Capital; Interest on Working Capital; Depreciation. Notably, provision for a mandatory mid-term performance review in 2026 accompanied by truing up of ARR for preceding years has also been made.
Read More (Date: June 5, 2024)

Joint Electricity Regulatory Commission for the State of Goa and Union Territories (JERC) amended its Standard of Performance (SoP) Regulations for Distribution Companies

JERC has issued a first amendment to its JERC (Standards of Performance for Distribution Licensees) Regulations, 2015. The amendment, to be effective from June 12, 2024, has revised the compensation payable to consumers for violation of SoPs and inserted 2 new indices namely Customer Average Interruption Duration Index (CAIDI) and Customer Average Interruption Frequency Index (CAIFI), among other things.

The Principal Regulations (PR) of 2015 were issued with the objective of enhancing the quality of service over the long term by laying down SoPs and undertaking periodic monitoring of the same. The PR also required licensees to establish a complaint handling mechanism and compensation mechanism and amount in case of failure to meet SoPs.
Read More (Date: June 12, 2024)

Assam Electricity Regulatory Commission (AERC) amended the 2019 Regulations for Grid-Interactive Solar Photovoltaic (PV) Systems

AERC has issued a first amendment to its Principal Regulations (PR) of 2019 pertaining to grid-interactive solar PV systems. The amendment, to be effective from June 29, 2024, increases the solar panel capacity eligible to be connected with the grid to 100% of the connected load/contract demand for both Low Tension and High Tension category of consumers as compared to the PR, which allowed for 80% of connected load.

The PR was issued to leverage the solar energy potential in the State and contains provisions related to metering arrangements, capacity targets for distribution licensees, individual project capacity and interconnection voltage, standards and safety requirements for interconnection, energy accounting and settlement, participation under renewable energy certificate mechanism, etc.
Read More (Date: June 29, 2024)

Uttarakhand Electricity Regulatory Commission (UERC) amended its 2023 Regulations for Electricity Supply from Renewable Energy and Non-Fossil Fuel Based Co-generating Stations

UERC has issued a first amendment to the UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy (RE) Sources and non-fossil fuel based Co-generating Stations) Regulations, 2023. The amendment, to be effective from June 20, 2024, introduces distributed Renewable Purchase Obligation (RPO) targets for obligated entities for the period 2024-25 to 2029-30, among other things. As per the amendment, distributed RPO are to be met only from the energy generated from RE projects less than 10 MW in size, including solar installations under all configurations (net metering, gross metering, virtual net metering, group net metering etc.) notified by the Central Government.

The Principal Regulations of 2023 specified the rules for generating stations based on non-conventional/RE sources, including tariff determination of such projects and mandatory RPO targets for obligated entities (distribution licensees, captive users and open access customers) for the period 2023-24 to 2029-30.
Read More (Date: June 20, 2024)

Karnataka Electricity Regulatory Commission (KERC) issued Regulations for Merit Order Despatch and Optimization of Power Purchase Cost

KERC has notified the KERC (Merit Order Despatch and Optimization of Power Purchase Cost) Regulations, 2024 for ensuring optimization of the power purchase costs of distribution licensees (DLs). The Regulations, to be effective from June 26, 2024, are applicable to the State Load Despatch Centre (SLDC), DLs, generating companies (including captive plants) supplying power to the DLs.

The Regulation contains, among other things, provisions such as general conditions and principles for preparation of Merit Order Despatch (MOD) Stack by the DL, principles for power despatch scheduling, guidelines for capacity declaration by generating units, methodology for revival of generating stations or units from 'Unit Shut Down'. In MOD, available electricity generation is ranked in ascending order from least energy charge to highest energy charge. This is used for deciding despatch instructions to minimize the overall cost of generation.
Read More (Date: June 26, 2024)

Delhi Electricity Regulatory Commission (DERC) notified Guidelines for Peer-to-Peer Transaction of Electricity

DERC has issued the Peer-to-Peer (P2P) Energy Transaction Guidelines, 2024 for consumers and prosumers to undertake mutual sale and purchase (based on blockchain or any other technology) of electricity through an electronic platform that serves as a common marketplace. The guidelines, to be effective from June 24, 2024, are aimed at promoting use of renewable energy, embedded generation within the distribution network, and generation of additional income.

The Guidelines place the responsibility of developing the interconnected platform (electronic marketplace) on the distribution licensees and require them to file petitions for levy of transaction charges on the consumers/prosumers. Additionally, the Guidelines contain provisions regarding eligibility, metering arrangements, scheduling, billing & energy accounting with regards to such P2P transactions.
Read More (Date: June 24, 2024)

Madhya Pradesh Electricity Regulatory Commission (MPERC) notified Regulations for Generation and Transmission for 2024-29

MPERC has issued regulations specifying terms and conditions for determination of generation and transmission tariffs in the state for the control period of fiscal year (FY) 2024-25 to FY 2028-29, to come into force on April 1, 2024.

The regulations detail the procedure for tariff determination of generation and transmission projects; tariff structure including capacity charges and energy charges; parameters considered for tariff fixation such as capital cost and capital structure of the project, additional capital expenditure, components of annual fixed cost (return on equity, depreciation, interest costs, operation and maintenance expenses etc.); norms of operation; and scheduling, accounting and billing among other things.
Read More (Date: June 27, 2024)

Chhattisgarh State Electricity Regulatory Commission (CSERC) amended its 2022 Regulations for Tariff Determination of Power generated through Renewable Energy (RE) Sources

CSERC has issued a first amendment to its Principal Regulations (PR) of 2022 namely the CSERC (Terms and conditions for determination of generation tariff and related matters for electricity generated by plants based on renewable energy sources) Regulations, 2022. The Amendment, to be effective from April 1, 2024, increases the normative working capital requirements considered by CSERC to 45 days receivables (of fixed and variable charges) as compared to 30 days allowed earlier. Additionally, the threshold for levy of late payment surcharge (LPS) has been increased from 30 to 45 days, with the LPS tied to the 1-year marginal cost of lending rate of State Bank of India.

The PR, notified with the aim to incentivize RE, details provisions regarding tariff design, structure, financial principles for tariff determination, technology parameters for different RE sources such as wind, solar, hydro, and non-fossil cogeneration.
Read More (Date: June 28, 2024)

Power Grid Corporation of India Limited (POWERGRID) acquired Transmission Project in Gujarat via Tariff Based Competitive Bidding (TBCB)

POWEGRID emerged as the successful bidder under TBCB for acquisition of "Khavda IV-E2 Power Transmission Limited"- a project Special Purpose Vehicle (SPV) on May 30, 2024, for augmenting evacuation of power from potential renewable energy (RE) zone in Khavda area of Gujarat.

The SPV has been acquired for implementation of POWERGRID's Inter State Transmission System (ISTS) project in Khavda which is slated to be commissioned in 21 months. As part of the ISTS project, the SPV, along with another SPV of POWERGRID namely POWERGRID KPS2 Transmission System Limited, will implement augmentation works at the existing substation Khavda Pooling Station-2. This will enable integration of an additional 6 gigawatts (GW) generation capacity in Khavda RE Park, cumulatively reaching 9 GW.
Read More (Date: May 30, 2024)

NTPC Limited (NTPC) and Central Electricity Authority (CEA) organized National Wokshop on Pumped Storage Projects (PSPs)

NTPC, in collaboration with CEA - the statutory body for providing technical support to the Government and other Power Sector stakeholders, organized a two day National Workshop on **"Standardization of Technical Specification for Pumped Storage Projects (PSPs)"** at the Power Management Institute (PMI) in Noida, Uttar Pradesh.

The Workshop, aimed at fostering collaboration and synergy among PSP developers, civil execution agencies, electro-mechanical equipment manufacturers, consultants, and government authorities, was attended by over 200 delegates from Central Public Sector Undertakings (CPSUs), State PSUs, Original Equipment Manufacturers (OEMs), and other technocrats.

Shri M A K P Singh *(Member-Hydro, CEA),* **Shri KS Sundaram** *(Director-Projects, NTPC)* and **Shri S N Tripathi** *(Regional Executive Director-Hydro, NTPC)* were present for the inaugural session of the event.

Various topics about PSPs such as policy framework and statutory clearance requirements (including forest & environmental clearances for detailed project report), innovative methodologies & technological and risk sharing measures during project construction phase, standardization of the EM equipment were explored during the workshop.
Read More (Date: June 11, 2024)

News & Developments - International

Inaugural United Nations (UN) Conference on Digital Public Infrastructure (DPI) conducted under India's Leadership

The Conference, themed ***'Citizen Stack: Digital Public Infrastructure'***, was held on April 25-26, 2024 at the UN Headquarters in New York, United States of America. Carrying forward the spirit of 'Vasudhaiva Kutumbakam' (One World, One Family) under India's G20 Presidency in 2023, India shared its **'Citizen Stack'** approach for building and scaling up DPI for delivering citizen-centric services and fostering inclusive growth.

The gathering was addressed by prominent experts spanning government, industry, and academia, including **Mr H E Dennis Francis** *(President of the UN General Assembly),* **Shri Ashwini Vaishnaw** *(Minister of Electronics & Information Technology, India),* **Shri Amitabh Kant** *(G20 Sherpa & Former CEO, NITI Aayog India),* **Smt Ruchira Kamboj** *(Permanent Representative of India to the UN),* and **Shri Saurabh Drolia** *(Director, Google Pay).*
Read More (Date: April 25-26, 2024)

The 2024 International Transport Forum (ITF) Summit organized in Leipzig, Germany

The Annual Summit, covering the overarching theme of ***Greening Transport: Keeping Focus in Times of Crisis***, was held from May 22-24, 2024 in the German city. The event was conducted under the Presidency of Lithuania, focusing on the Transport Sector's role in environmental sustainability given that 30% of global carbon dioxide emissions come from the sector.

Around 1,200 participants attended the Summit, including ministerial-level delegations from over 40 countries and representatives from international organisations, corporations & non-governmental organisations. The Summit explored how decision makers can maintain a long-term policy focus amid crises such as climate change, Covid-19, and geopolitical conflicts to promote a greener and more resilient transport sector.
Read More (Date: May 22-24, 2024)

International Maritime Organization (IMO) organized Side Event to the United Nation (UN) International Conference on Small Island Developing States (SIDS) in Antigua and Barbuda

The event, namely **Sustainable Shipping and Ports for SIDS: Resilience and strengthened Climate Investment**, was held on May 28, 2024 in collaboration with the Antigua and Barbuda Department of Marine Services. The event emphasized the importance of maritime decarbonization and energy transition in SIDS through the development of climate-resilient shipping and ports infrastructure, featuring an address by **Mr Roel Hoenders** *(Head, Climate Action and Clean Air, IMO)* and a panel discussion on the challenges and opportunities of implementing the 2023 IMO Greenhouse Gas (GHG) Reduction Strategy. The 4th UN International Conference on SIDS took place from May 27-30, 2024, covering the theme ***'Charting the Course Toward Resilient Prosperity'.***
Read More (Date: May 28, 2024)

The European Commission organized the European Sustainable Energy Week (EUSEW) 2024 Annual Conference

The 18th edition of the EUSEW Annual Conference, aimed at promoting **sustainable and efficient use of energy in Europe**, was held from June 11-13, 2024 in Brussels, Belgium. The policy conference brought together multiple stakeholders viz. policymakers, industry representatives, businesses, civil society organizations and citizens for a discussion on sustainable energy issues and ideas, new policy developments, and best practices for sustainable energy development.

Around 11,500 participants joined the conference, which featured more than 60 policy sessions and 7 plenaries. Some of the key sessions included net-zero energy solutions for competitive and low-carbon transport industries, pioneering solutions for renewable energy sources, and solutions for energy efficiency and renewables by small and medium-sized enterprises.
Read More (Date: June 11-13, 2024)

Article: Electricity Tariff - Simplified

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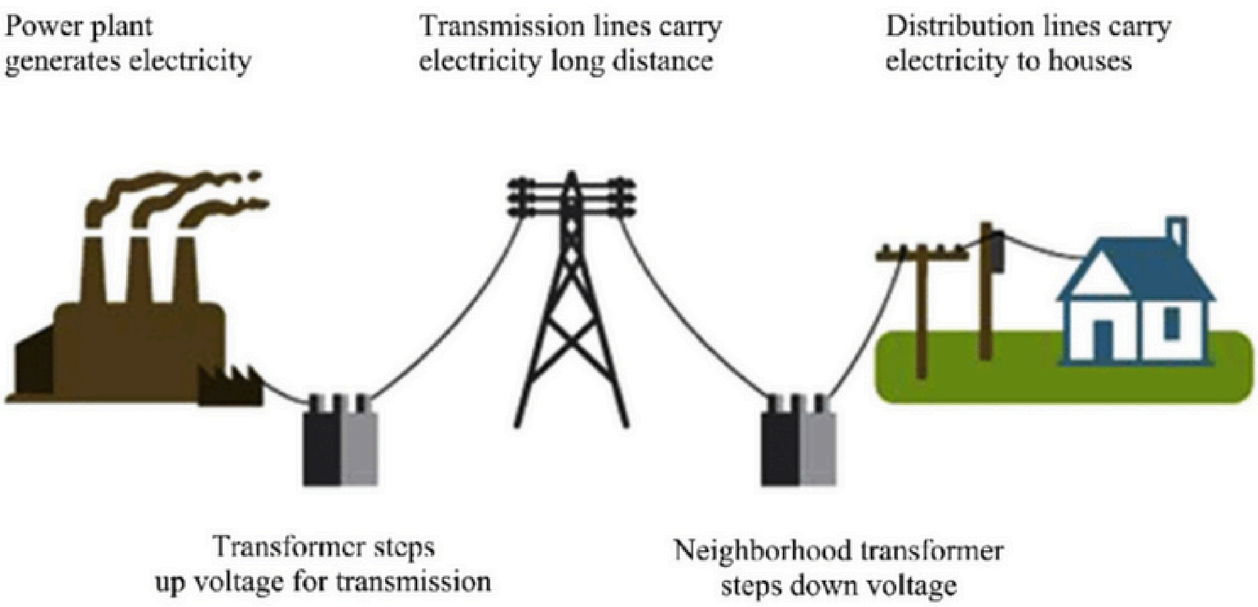
Introduction:

1. Complete Cycle of Electricity Business:

Electricity Cycle basically consists of Generation, Transmission and Distribution. Electricity Generation is the process of generating electricity from sources of primary energy like fossil fuels (Coal), nuclear power plants, hydro power plants, solar panels, biofuels, wind, etc. Electricity Transmission is the bulk movement of electrical energy from a Generating power plant, to an electrical substation. It is stepped up near Generating Station using Power Transformers to High Voltages to reduce Transmission Losses and then Stepped down and Distributed from Distribution Transformers near Load centers like City or Industry at Low Voltages. Electricity Distribution is the final stage of delivery of electricity to Consumers at Industrial town or City or other places. This cycle can be shown as under:



2. Tariff & its Legal Provisions:

What is Tariff?

Tariff is the Rate at which electrical energy is supplied to a consumer. Tariff is so Important that one of the Objective of **the Electricity Act, 2003** (herein after referred to as **"Act"**) is Rationalization of electricity Tariff. The Act provides for Tariff Policy at Section 3(2). Further, Section 45(1) provides that a Distribution Licensee shall charge such Tariff as determined by the Commission from time to time.

- Section 61(a) provides that the Appropriate Commission shall specify the terms and conditions for the determination of tariff, and in doing so, shall broadly be guided by:
  (a) the principles and methodologies specified by the Central Commission for determination of the tariff applicable to Generating companies and Transmission licensees;
  (b) Multi Year Tariff (MYT) principles;
  (c) Tariff should progressively reflect the cost of supply of electricity.
- Section 62(1)(a) provides for fixing the minimum and maximum ceiling of tariff for sale or purchase of electricity.
- Section 62 provides for Determination of Tariff.
- Section 63 provides for Adoption of Tariff in case of Bidding.
- Section 65 provides for Grant of Subsidy by the Government, to any class of consumers, in the Tariff determined by the State Commission.
- Section 79(1) provides for Regulating the Tariff of Generating Companies by Central Commission.
- Section 83(4) provides for Joint Commission to determine tariff in respect of the participating States or Union Territories.
- Section 86(1)(a) provides for Determination of the Tariff for Generation, Supply, Transmission and Wheeling of electricity within the State, by the State Commission.

3. Powers of Commission:

As per the provisions of the Act, the Commissions have been provided with combination of:

- Powers of Legislature (to make Electricity related Regulations)
- Powers of Executive (to determine Tariff for Electricity) and
- Powers of Judiciary (to Adjudicate disputes between the Licensees & Generators)

All proceedings before the Commission are deemed to be Judicial proceedings and the Commission is deemed to be a Civil Court.

4. Tariff Regulations issued by Commission:

The process of Generation or Transmission or Distribution Tariff are different from each other, however the basic principles and methodology are similar. The complex web of Tariff determination can be understood by analyzing the Transmission Tariff determination in a Simplified manner as under:

In Order to fulfill the duties and obligations, under the Act, the Commission first notifies Regulations for Determination of Tariff.

Example: Madhya Pradesh Electricity Regulatory Commission (Terms and Conditions for Determination of Transmission Tariff) (Revision - V), Regulations, 2024 notified in Gazette on 28/06/2024. These Regulations specify the principles and methodologies for the next control period of five years from FY 2024-25 to FY 2028-29. They Revise the previous Regulations, 2020 which were applicable for the control period of five years from FY 2019-20 to FY 2023-24.

Some of the fundamentals of the aforementioned Tariff Regulations are as under:

- Tariff for a financial year (FY) is determined on provisional basis before start of the FY by issue of Tariff Order in March every year.
- After completion of FY, the annual financial statements like Balance sheet, Profit & Loss statements, etc are Audited by Company's Auditors and also by the AG office by September. So the Licensee is required to file True-up petitions in November every year. The True-up Order is generally issued in January / February. This true-up Order generally becomes base for determination of Tariff for next FY.
- The Commission carries truing up of tariff of Transmission Licensee based on the controllable and uncontrollable factors.
- All Regulations are notified after considering public comments during the process of public hearing on Draft Regulations under section 181(3) of the Act. Tariff petitions are also listed for public hearing before finalization of Orders to hear the comments of all stakeholders.
- The licensee is required to get the Business Plan and Capital Investment approved by the Commission. Capital Cost and Capital structure, Additional capitalization and Decapitalization, Renovation and Modernization (R&M) is considered.
- The Annual Fixed Cost (AFC) consist of the following components – (a) Return on equity, (b) Interest and finance charges on loan capital, (c) Interest on Working capital, (d) Depreciation and (e) Operation and Maintenance (O&M) expenses.
- Debt-equity ratio is considered as 70:30. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.
- Return on equity is computed at the base rate of 15.50 %. Tax on Income is considered appropriately.
- Interest and finance charges on loan capital is considered by considering the repayment as equal to the depreciation. For depreciation, the salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset, on 'Straight Line Method' and at rates specified in the Regulations (which are Generally in line with the rate of depreciation allowed in the Income Tax Act.
- Working capital is calculated on normative basis considering:
    1. Maintenance spares @ 15% of the O&M expenses
    2. Receivables equivalent to 45 days of transmission charges and
    3. Operation and Maintenance expenses for one month.

  Rate of interest on working capital is considered on normative basis of SBI MCLR rate with margin of 350 basis points.
- Operation and Maintenance Expenses is determined on normative basis considering employee expenses, repair & maintenance expenses and administrative & general expenses. Terminal Benefit expenses are considered as per Regulations. The total allowable O&M expenses for the Transmission Licensee is calculated on normative basis by considering the average number of bays and Ckt-km of line length.

- Tariff income includes the transmission charge and other charges as specified by the Commission. The non-tariff income includes income from investments, Fixed and other deposits and any other non-tariff income. Provisions related to Late payment surcharge & Rebate for timely payment are also incorporated in the Regulations.
- Annual Transmission Charges is Shared by Beneficiaries in ratio of their allotted Capacity. Loss trajectory prescribed in previous Regulations and the actual transmission loss of previous years are considered for prescribing the Loss trajectory for future periods.

5. Tariff Order to determine Tariff:

After notification of the Regulations, 2020 the Transmission Licensee (MPPTCL) filed petition for determination of Transmission Tariff for MYT control period from FY 2019-20 to FY 2023-24 which was registered as Petition No. 45/2020 and Order dated 19/05/2021 was issued by the Commission **(MPERC)**. The Annual Revenue Requirement (ARR) for 5 years was approved as under:

(Rs. in Crore)

S. No.	**Particulars**	**ARR for the Financial Year**				
		FY 2019-20	**FY 2020-21**	**FY 2021-22**	**FY 2022-23**	**FY 2023-24**
1	**2**	**3**	**4**	**5**	**6**	**7**
1	O&M Expenses	556.68	608.41	659.47	702.21	741.01
2	Terminal Benefits	1834.01	1973.01	2039.44	2108.20	2125.78
3	Depreciation	455.50	509.18	538.97	559.02	568.16
4	Interest & Finance Charges	152.36	166.62	181.08	181.15	171.50
5	Interest on Working Capital	70.03	71.17	70.51	73.80	75.81
6	Return on Equity	498.93	552.03	608.18	644.76	667.94
7	Expenses towards payment to PPP Licensee	37.80	37.80	37.80	37.80	37.80
8	Expenses towards payment to OPGW Charges to PGCIL	2.47	1.18	1.09	1.06	1.02
9	MPERC's Fee	0.77	0.86	0.94	1.01	1.08
10	Taxes & fees (other than MPERC fee)	1.98	2.05	2.12	2.19	2.27
11	Security Expenses	22.74	26.94	26.96	27.02	27.08
	TOTAL -	**3633.27**	**3949.25**	**4166.56**	**4338.22**	**4419.45**
12	Less Non-Tariff Income (-)	-23.00	-24.00	-25.00	-26.00	-27.00
	ARR -	**3610.27**	**3925.25**	**4141.56**	**4312.22**	**4392.45**

- Total Energy Handled was expected to be 108091.88 MUs in FY 2023-24. So for FY 2023-24, the ARR of Rs 4392.45 Cr was divided by total Energy of 108091.88 MUs to arrive at Transmission Charges per Unit of **Rs 0.41 per unit.**
- The Total Transmission capacity was considered as 25676 MW for FY 2023-24. So for FY 2023-24, the ARR of Rs 4392.45 Cr was divided by Capacity of 25676 MW to arrive at annual Transmission charge of Rs 0.1711 Cr/MW i.e. Rs **17.11 Lakhs / MW**.

The MPERC has issued Tariff Orders for MP Power Generating Company and other Generators. In the MPERC's Retail Supply Tariff Order for FY 2023-24, the cost of power scheduled from Intra State Generators is considered from the relevant Tariff Orders of MPERC and the cost of Central Sector Generators is considered from the relevant Orders of CERC. Similarly, the cost of intra-state & inter-state Transmission is considered from the relevant Orders of MPERC & CERC respectively.

Thereafter, the average cost of supply was determined as **Rs 6.79 per unit** for FY 2023-24. This was considered for determining Retail Tariff for various category of consumers like Domestic, Non-domestic, Industries, Agriculture, Shopping Malls, etc.

6. Conclusion and Way Forward:

SAFIR's Members are basically concerned with Infrastructure Regulations. The principles and methodologies are similar even though the actual Regulations may vary. The knowledge gained by analyzing Tariff Regulations and Tariff structure of Electricity can be utilized for improving the Tariff structures of other sectors also. Rapid Growth in Infrastructure is required to boost GDP and standard of living of people. Ultimately measures conducive to development of Electricity Industry, Infrastructure, boosting efficiency, promoting Competition, protecting Consumer interest has to be ensured by rationalization of Tariff.

About SAFIR

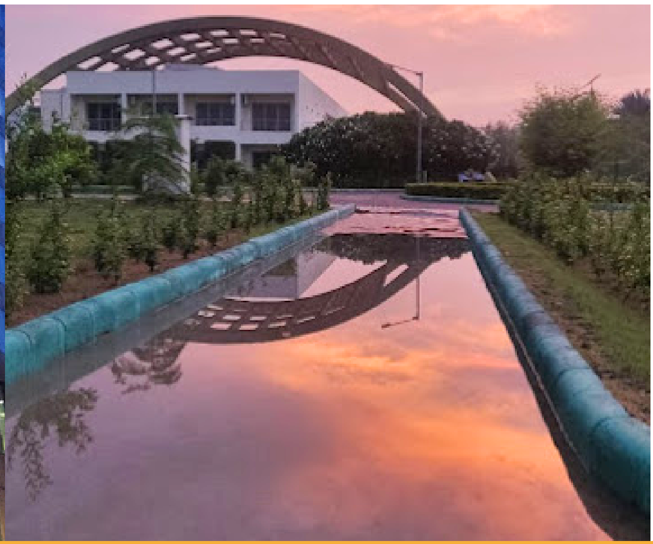
The South Asia Forum for Infrastructure Regulation (SAFIR) was established in May 1999. SAFIR aims at providing high quality capacity building and training on infrastructure regulation & related topics, in South Asia and to stimulate research on the subject by building a network of regional and international institutions & individuals that are active in the field. It also aims at facilitating effective and efficient regulation of Utility and infrastructure industries, initiate beneficial exchange of knowledge and expertise, and set the trend of rapid implementation of global best practices.

About IICA

The Indian Institute of Corporate Affairs (IICA) is a leading think tank and capacity building institution under the aegis of the Ministry of Corporate Affairs (MCA), Government of India. IICA is committed to delivering opportunities for research, education and advocacy while simultaneously creating a repository of data and knowledge for policy makers, regulators as well as other stakeholders with a focus on contemporary business and regulatory issues in the domain of newly emerging discipline of 'Corporate Affairs'.

About Centre of Regulatory Governance

The Centre of Regulatory Governance (CRG) at IICA was established with the primary objective of forging a deeper understanding of regulatory governance and its far-reaching implications. By bringing together experts, scholars, policymakers, and industry leaders, CRG, IICA is committed to nurturing a space where the intricate dynamics of regulation and governance are explored, studied, and put into practice. CRG aims to conduct cutting-edge research on regulatory governance, facilitate knowledge dissemination, provide capacity-building programs, offer a platform for collaborative research, and influence policy decisions.



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